

Environmental Design, Policy, and Planning (EDP)**Major and Minor in Environmental Design, Policy, and Planning**

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Environmental Design, Policy, and Planning (EDP)

The Environmental Design, Policy, and Planning major, leading to a Bachelor of Arts degree, provides the skills, knowledge, and preparation for students to understand and address complex issues related to development, land-use, urbanization, and suburban sprawl. The curriculum integrates principles and methodologies from social sciences, natural sciences, and humanities. The goal is to address the complex scientific, legal, ethical, political, environmental, and socio-economic issues that surround the development, management, and use of the built environment.

The B.A. degree prepares students for entry-level employment in the public, private, or non-profit sectors in a variety of fields including urban and regional planning, community planning, environmental consulting, land and real estate development, and public administration. The major prepares students for graduate study in environmental design, planning, architecture, law, management and business.

The major builds on the interdisciplinary sustainability core curriculum. Students will enroll in major-specific courses in their junior and senior year. As part of the preparation, students will work in teams with students enrolled in related majors to collaboratively solve problems. A design project is an essential part of the curriculum to provide real-world experience. Internships and independent research courses provide additional real-world experiences. Seniors are required to present their Design Project at an Annual Gathering of Researchers and Scholars.

Requirements for the Major and Minor in Environmental Design, Policy, and Planning (EDP)**A. Required Foundation Courses for Major (35 credits)**

- MAT 131 or MAT 125 Calculus or AMS 151. If students do not place into MAT 125 or 131 or AMS 151 on the basis of the math placement examination, MAT 123 is a required course for the major.
- ECO 108 Introduction to Economics
- SBC 111 Introduction to Sustainability or ENS 101 Prospects for Planet Earth
- SBC 115 Introduction to Human Demography
- CHE/ENV 115 Chemistry, Life, Environment (Note: CHE 115, 129, 131, or 152 may be substituted for CHE/ENV 115)
- SBC 113/SBC 114 Physical Geography or GEO 102 The Earth
- GSS 105 Introduction to Maps and Mapping
- AMS 102 Elements of Statistics
- SBC 201 Systems and Models
- POL 102 Introduction to American Government
- SBC 206 Economics and Sustainability

B. Core Courses (30-31 credits):

- CSK 302 Technical Writing and Communication
- GSS 313 GIS Applications and Design (or GSS 317 Geospatial Narratives)
- GSS 314 GIS Laboratory (only if taking GSS 313)
- GSS 325 GIS Design and Applications II
- EDP 301 Urban Systems
- EDP 302 Sustainable Planning and Development
- EDP 303 Spatial Economics
- EDP 307 Site Planning and Design
- EDP 404 Environmental Design Project (see notes)
- ENS 333 Environmental Law
- SBC 200 Human Settlements: History and Future

C. Elective (3 credits)

Choose one of the following courses:

- EDP 305 Risk Assessment and Sustainable Development
- AFS 374/SBC 374 Environment and Development in African History
- EHI 322 Human Ecology
- EHM 316 Cuba and Sustainability
- EHM 321 Utopia and Dystopia and the Environment in Literature and Culture
- EHM 322 Ecofeminism, Literature & Film
- EHM 325 Environmental Film, Media, Arts

- SBC 307 American Environmental History
- SBC 308 American Environmental Politics
- SBC 309 Global Environmental Politics
- SBC 310 Migration, Development and Population Redistribution
- SBC 311 Disasters and Society: A Global Perspective
- SBC 312 Environment, Society and Health
- SBC 321 Ecology and Evolution in American Lit
- SUS 303 Demographic Change and Sustainability
- SBC 325 Environmental Writing and the Media
- SUS 366 Philosophy of the Environment
- EDP 487 Research in Environmental Design, Planning, and Policy (with permission)
- EDP 488 Internship in Environmental Design, Planning, and Policy (with permission)

D. Communications and Writing requirement

Proficiency in writing, oral communication, and computer literacy will be encouraged in all students. In addition to CSK 302, these skills will be developed within the context of other formal coursework and no additional credits are required. To meet the upper-division writing requirement, students must submit two papers **with letter grades of no lower than a B** from any 300-level or 400-level course in the major to the director of the EDP Undergraduate Program.

Students should consult with the department advisor to ensure that their plan for completing the Upper Division Writing Requirement is consistent with university graduation requirements for General Education. Students completing the Stony Brook Curriculum (SBC) must complete a course that satisfies the "Write Effectively within One's Discipline" (WRTD) learning objective to graduate. The Upper Division Writing Requirement is consistent in most cases with the SBC learning outcomes for WRTD.

Notes:

1. Internship with significant practical experience in planning and/or environmental design may be substituted for EDP 404 with permission of Undergraduate EDP Program Director.
2. All courses offered for the major must be passed with a letter grade of C or higher. Course taken with the Pass/NC option may not be applied to the major.

Study Abroad

Stony Brook University offers study abroad experiences that are focused on issues of sustainability in Cuba, Madagascar, and the Turkana Basin (Kenya). While issues of climate change, water and energy security, sustainable agriculture, environmental justice, sustainable economic development, conservation of unique and threatened ecosystems, population growth, and human health are important everywhere, viewing these issues through the lens of a different place and a different culture provides a valuable perspective. Students are encouraged to participate in study abroad experiences and to talk with their major director to determine how study abroad coursework can be used to fulfill some requirements for their major.

Double Majors

Excluding CSK 302 Technical Writing and Communication, no more than 6 credits of 300-400 level course credits can be applied to two majors within Sustainability Studies or the School of Marine and Atmospheric Sciences.

Minor in Environmental Design, Policy, and Planning (EDP)

The Environmental Design, Policy, and Planning minor is intended for students who seek to complement their chosen major with a foundation in complex scientific, legal, ethical, political, environmental, and socio-economic issues that surround the development, management, and use of the built environment.

Requirements for the Minor in Environmental Design, Policy, and Planning (EDP)

At least 12 credits applied to the minor may not be applied to any major or other minor within the Sustainability Studies Program or the School of Marine and Atmospheric Sciences. No more than one three-credit course in the minor may be taken under the Pass/No Credit option. All upper-division courses offered for the minor must be passed with a letter grade of C or higher. Completion of the minor requires 21-22 credits.

1. Required courses (18 credits):

- GSS 105 Introduction to Maps and Mapping
- SBC 111 Introduction to Sustainability Studies (or ENS 101 Prospects for Planet Earth)
- SBC 200 Human Settlements: History and Future
- SBC 206 Economics and Sustainability
- EDP 301 Urban Systems
- EDP 302 Sustainable Planning and Development

2. Electives (3-4 credits):

Choose one of the following courses:

- EDP 303 Spatial Economics
- EDP 307 Theories and Design of Urban Settlements

- SBC 307 American Environmental History
- SBC 308 American Environmental Politics
- SBC 309 Global Environmental Politics

Declaration of the Minor

Students should declare the Environmental Design, Policy, and Planning minor no later than the middle of their sophomore year, at which time they should consult with the minor coordinator or undergraduate director and plan their course of study for fulfillment of the requirements.

Sample Course Sequence for the Major in Environmental Design, Policy, and Planning

A course planning guide for this major may be found here. The major course planning guides are not part of the official Undergraduate Bulletin, and are only updated periodically for use as an advising tool. The Undergraduate Bulletin supersedes any errors or omissions in the major course planning guides.

FRESHMAN

FALL	Credits
First Year Seminar 101	1
WRT 101	3
SBC 111	3
MAT 125 or MAT 131	4
SBS 113/SBC 114	4
Total	15

SPRING	Credits
First Year Seminar 102	1
WRT 102	3
CSK 102	1
SBC 117	3
ENV 115	3
SBC 205	1
POL 102	3
Total	15

SOPHOMORE

FALL	Credits
SBC 201	1
ECO 108	4
AMS 102	3
SBC 115	3
Foreign language or elective	4
Total	15

SPRING	Credits
SBC 200	3

SBC 354	3
Foreign language or elective	4
CSK 10x selection	1
SBC	3
Total	14

JUNIOR

FALL	Credits
GSS 313 and GSS 314	5
Group 3: EDP 309	3
SBC 206	3
CSK 302	3
SBC	3
Total	17

SPRING	Credits
Group 3 Selection 2	3
EDP 307	3
Group 2: EDP 301	3
EDP 303	3
SBC	3
Total	15

SENIOR

FALL	Credits
Group 2: EDP 302	3
EDP 404*	3
Group 4 select 1	3
SBC	3
SBC	3
Total	15

SPRING	Credits
Internship/Research	6
Group 5 select 1	3
SBC	3
SBC	3
Total	15

*Offered every other year; should be taken junior or senior year.

EDP

Environmental Design, Policy, and Planning

EDP 301: The Built Environment I

The functional determinants of an urban region's physical infrastructure, encompassing cities, suburbs, exurbs and satellite communities are presented. The course will cover metropolitan infrastructure components including systems of transportation, water supply, waste disposal and energy distribution and how they are shaped by the interaction of economics, politics and planning practice.

Prerequisite: SBC 200

SBC: SBS+

3 credits

EDP 302: The Built Environment II

The functional dynamics underlying the development and planning for structures and facilities in urban regions are presented including their cities, suburbs, exurbs and recreational satellite communities. The course will cover the interaction of real estate economics, politics and good planning practices as they affect residential, commercial, educational, cultural and industrial sites.

Prerequisite: SBC 111 and SBC 200

SBC: SBS+

3 credits

EDP 303: Spatial Economics

Economic theories and empirical data that explain the distribution of man-made activities in geographic regions are presented. The course emphasizes spatial patterns among and within urban regions of the United States. Classes will cover the economic and demographic factors governing the distribution, within natural regional conurbations, of residences, industries and all other activities whose location is economically determined.

Prerequisite: SBC 206

3 credits

EDP 305: Risk Assessment and Sustainable Development

Course presents a comprehensive overview of risk analysis and its application to a broad range of human activities. The methodology of risk analysis enables those involved in environmental sustainability to evaluate the probability of an adverse effect of an agent, chemical, industrial process, or natural process.

Prerequisite: ENV 115

3 credits

EDP 307: Theories and Design of Urban Settlements

The course introduces students to the underlying economic, social and physical forces that shape the development of human settlements, with an emphasis on urban conurbations, and the typical United States metropolitan region.

Prerequisite: SBC 111 and SBC 200

SBC: SBS+

3 credits

EDP 309: Planning: Policies and Regulations

An introduction to the process of planning and development of regulations necessary for the implementation of planning objectives.

Prerequisite: SBC 200

SBC: SBS+

3 credits

EDP 404: Environmental Design Project

The Environmental Design Project is the culmination of the EDP Major. Each student should produce an individual work, that is a thoughtful analysis of a real-world problem addressing one of four central themes of the major's core: 1) historic and theoretical perspectives; 2) the physical and built environment; 3) policy, politics and regulation; or 4) societal and cultural change. Allowing that there may be some overlap among these four themes, each project must focus on a specific place, process or object. Students are expected to produce a final project portfolio-- which may include audio-visual materials, drawings, models, posters, artifacts, etc.-- and a written report. Each student is expected to make a presentation to faculty and students before the close of the semester.

Prerequisites: EDP 301 and EDP 302 and EDP 307 and CSK 102

SBC: EXP+

3 credits

EDP 444: Experiential Learning

This course is designed for students who engage in a substantial, structured experiential learning activity in conjunction with another class. Experiential learning occurs when knowledge acquired through formal learning and past experience are applied to a "real-world" setting or problem to create new knowledge through a process of reflection, critical analysis, feedback and synthesis. Beyond-the-classroom experiences that support experiential learning may include:

service learning, mentored research, field work, or an internship.

Prerequisite: WRT 102 or equivalent; permission of the instructor and approval of the EXP+ contract (http://sb.cc.stonybrook.edu/bulletin/current/policiesandregulations/degree_requirements/EXPplus.php)

SBC: EXP+

0 credit, S/U grading

EDP 487: Research in Environmental Design, Policy, & Planning

Qualified advanced undergraduates may carry out individual research projects under the direct supervision of a faculty member. May be repeated.

Prerequisite: Permission of instructor

SBC: EXP+

1-6 credits, S/U grading

EDP 488: Internship in Environmental Design, Policy, & Planning

Participation in local, state, and national public and private agencies and organizations. May be repeated to a limit of 12 credits.

Prerequisites: U3/U4 status and permission of the Undergraduate Program Director

SBC: EXP+

0-12 credits, S/U grading

SBC

Sustainability Block Curriculum

SBC 111: Introduction to Sustainability Studies

Survey course introduces concept of sustainability. Sustainability is often defined as the ability to provide for the needs of the world's current population without damaging the ability of future generations to provide for themselves. This course reviews the needs of the current population and future generations, trends that affect our ability to provide those needs, and possible solutions that are environmentally, economically, and socially acceptable.

SBC: SNW

3 credits

SBC 113: Physical Geography Lecture

This study of geosystems examines modern environmental problems through quantitative methods, analysis, and modeling grounded in basic and applied science and research. The goal of the course is to introduce students to the fundamental processes that dominate the atmosphere, hydrosphere, lithosphere, and

biosphere, their characteristics and complex interactions, and their impact on human life and society.

DEC: E
SBC: SNW

3 credits

SBC 114: Physical Geography Lab

This laboratory course provides hands on experience in understanding the geosystems, including distribution and interrelationships of climate, vegetation, soils, and landforms.

Pre- or corequisite: SBC 113

1 credit

SBC 115: Introduction to Human Demography

An introductory course on the study of human population. Measurement issues and data in demographic analysis, as well as demographic perspectives on the basis of a review of major sources of information about population studies will be presented. Theories incorporating social, economic and political explanations for influences on human population growth will be considered. Population processes, with focus on fertility, mortality and migration, are reviewed. Population structure and characteristics, the interaction of the population processes and the number of people in a society of a given age, sex, race, ethnicity, socio-economic levels, marital status, and gender, are reviewed. Major issues related to sustainability (such as economic development, food and pollution, urbanization, gender and minority empowerment, and the human relationship and ecology with other organisms and species) are reviewed.

Prerequisite: MAT 125, MAT 131, MAT 132, AMS 151, or level 6 or higher on math placement exam

SBC: SBS

3 credits

SBC 116: Introduction to Human Geography

Survey course introduces geography as a social science by emphasizing the relevance of geographic concepts to human problems. Course emphasizes globalization and cultural diversity.

DEC: F
SBC: SBS

3 credits

SBC 117: Design Drawing

This introductory course exposes the student to the fundamental theories and practices

employed in visually representing design concepts from observational through technical and speculative drawing. The course content introduces the student to contour drawing, rendering, orthographic projection, and pictorial drawing. Project work engages the student in the application of the above-mentioned drawing techniques and develops skills through the solution of student tailored problems.

DEC: D
SBC: TECH

3 credits

SBC 200: Human Settlement: History and Future

The history of city growth over the millennia as affected by technological change is a basis for understanding the future of human settlement. More than half of the world's population currently lives in cities and urbanization continues on a global scale. The universality of urban development and resulting patterns will be presented as well as limits on growth of cities. Architectonic and socioeconomic planning theories and strategies for sustainable growth are presented. The development of Long Island, which is a microcosm of national and global patterns, will be discussed in detail.

DEC: F
SBC: SBS

3 credits

SBC 201: Systems and Models

Introduction to the dynamic modeling of complex systems. Students will learn to use simulation software that facilitates the visualization, formulation, and analysis of systems. Students will learn about systems with positive and negative feedbacks, the effects lags on system performance, and the difference between stocks and flows. Systems studied will include ecological models, economic models, chemical models, population models, epidemiological models, and models that include the interactions between population, economic development, and the environment.

Prerequisite: AMS 151 or MAT 125 or MAT 131 or MAT 141

SBC: TECH

3 credits

SBC 203: Interpretation and Critical Analysis

An introduction to interdisciplinary inquiry and representation in arts, culture, and theory with emphasis on the roles of analysis, argument, and imagination in multiple

media. Requires serious engagement with sophisticated texts.

Pre- or corequisite: WRT 102

DEC: G
SBC: CER, HUM, WRTD

3 credits

SBC 204: Population Studies

The course will present basic mathematics of population growth and introduce various approaches for modeling populations, including population viability analysis (PVA). PVA, the quantitative assessment of the extinction risk of rare species or populations, takes biological information (habitat requirements, birth and death rates, population size) and makes predictions about future population sizes. Real examples will be discussed for a range of organisms, from bacteria to plants and mammals. This course will provide also the background for understanding human population growth. The impacts of human population growth in the developed and developing world on the ecology of other organisms, habitats and systems will also be discussed.

Prerequisite: MAT 125, MAT 131, or AMS 151

DEC: E
SBC: STEM+

3 credits

SBC 206: Economics and Sustainability

Introduction to the basic economic concepts used in sustainability analysis. Students will learn the basic concepts and how to apply them in various context. Topics include the analysis of situations in which the behavior of individuals indirectly affects the well-being of others, strategic behavior and the environment, and the use of market-oriented policies to help in the stewardship of the environment.

Prerequisite: ECO 108

DEC: F
SBC: SBS+

3 credits

SBC 307: American Environmental History

This course provides an overview of the history of how Americans have used, viewed and valued the natural environment. Beginning with the Indians and the early colonists (15th-16th centuries), the course will examine the cultural, social, economic, political, and technological currents that shaped North Americans' relationships with their environment in early and later industrial eras, after World War II, and finally, in the late 20th and early 21st centuries. Historical snapshots will center on people living in more natural

places, such as farms and forests, as well as more built places, such as factories, cities, and suburbs. Events in the northeastern U.S. will provide a geographic focus, but the course will also look at related happenings elsewhere on the North American continent and beyond. Finally, it will examine at the growing array of movements that have identified themselves as 'environmental,' at the 'greenness' of modern culture, and at the environmental dimensions of a globalizing era.

Prerequisite: WRT 102

DEC: K & 4

SBC: SBS+, USA

3 credits

SBC 308: American Environmental Politics

This course will survey the politics of environmental policy-making in the United States. It examines how contrasting political, economic and social interests and values have clashed and contested with one another, and the exerted power, in the environmental policy realm. The course will explore past precedents and roots, but with a view to explain the shape of this realm in the modern United States, including the many actors and institutions: local, regional and national governments, non-governmental organizations and interest groups, as well as the public. It will look at the main patterns by which these groups have defined environmental problems and formulated and implemented solutions. A chief goal is to illuminate how and why solutions of real-world environmental problems, if they are to be effective, differ from those of scientific or engineering puzzles.

Prerequisite: POL 102

DEC: K

SBC: SBS+

3 credits

SBC 309: Global Environmental Politics

This course will explore the politics of environmental policy-making within the international realm. Focused especially on environmental dilemmas that cross national boundaries (i.e., pollution), or that are shared by multiple nations (i.e., global warming) it will look at the ways that such problems have been defined and their solutions sought, both with and without an over-arching state or governance. It will survey the many groups, interests and values that have clashed and competed with one another to exert power and influence international environmental policies, as well as the variety of international institutions and agreements that have sought to formulate and implement solutions. One goal is to illuminate how and why effective

solutions to global environmental problems differ from those to scientific or engineering puzzles. The course also aims to spur student engagement with the sometimes overwhelming nature of global environmental threats, the tenuous and sometimes counterproductive ways that knowledge and power can be linked, and the ways individuals may act powerfully in service of "sustainability."

Prerequisite: SBC 111 or ENV 115 or ENS 101 or GEO 101 or permission of instructor

SBC: GLO

3 credits

SBC 310: Migration, Development and Population Redistribution

This course draws upon the contributions of various social and natural sciences (including population and urban geography, demography, political science, sociology, history, economics, public health and environmental sciences) to explore the effects of migratory and demographic shifts on the environment, social welfare, public health, economic development, ethnic diversity, urbanization, public policy and planning. It will examine the political, social, environmental, health and economic effects on sustainability.

Prerequisite: SBC 115

3 credits

SBC 311: Disasters and Society: A Global Perspective

This class introduces students to the sociological examination of natural, technological, and industrial disasters. Students will explore how and why disasters are fundamentally social events: What do disasters reveal about society? Why are the human consequences of disasters unequally distributed? What are the typical ways in which states, organizations, and communities respond to disasters? Focusing on case studies from around the world, students will discuss: What are the long-term/short-term causes of particular disasters? What forms of suffering the disasters under consideration generated? What state/civil society actions did they trigger? What advocacy networks were put in place in their aftermath?

Prerequisite: SBC 111, or ENS 101, or GEO 101; POL 102 or SOC 105

DEC: H

SBC: STAS

3 credits

SBC 312: Environment, Society, and Health

This class examines the interactions between environment, social structures, and institutions.

The first part of the class examines the ways in which environmental issues are perceived and constructed by various social actors (lay public, state officials, scientists, activists, media). The second part of the class will examine the differential impact of class, race, and gender on the distribution of hazards and risks (what is commonly known as 'environmental inequality'). In the third part of the class, students will be introduced to different cases of 'contested environmental illnesses' (cancer, lead-poisoning, asthma).

Prerequisite: SBC 111, or ENS 101, or GEO 101; POL 102 or SOC 105

DEC: F

SBC: SBS+

3 credits

SBC 321: Ecology and Evolution in American Literature

This course is a review of 19th- and 20th-century American writers who trace the evolution of the US with respect to ecological practices through various multicultural perspectives. Literature covered will include transcendentalist essays, utopian/dystopian novels, ecofeminist fiction, and journalism.

Prerequisite: WRT 102

Advisory Prerequisite: SBC 203

DEC: G

SBC: HFA+, WRTD

3 credits

SBC 325: Environmental Writing and the Media

An examination of multiple genres (including: photo journalism, literary nonfiction, fine art and advertising and documentary film) in order to understand ways in which these genres are utilized to inform and manipulate public opinion regarding the environment. The culmination of the course will be a final project using multiple genres.

Prerequisite: WRT 102

Advisory Prerequisite: SBC 203

DEC: G

SBC: HFA+, WRTD

3 credits

SBC 330: Extreme Events in Literature

A course that examines the depiction of extreme events (both natural and human-related) in literature, journalism, art, and film, with special emphasis paid to the extended political and social issues that are raised by the events in question.

Prerequisite: WRT 102

Advisory Prerequisite: SBC 203

DEC: G

SBC: HFA+, WRTD

3 credits

SBC 331: City, Suburb, Sprawl

A course that traces the shift from city to suburb to sprawl in texts that span the late-nineteenth century through the early twenty-first century, with special attention paid to phenomena such as industrialization, immigration, mass society, globalization, and postmodern hyperspace. An interdisciplinary set of texts will include works by novelists, artists, architects, and literary theoreticians.

Prerequisite: WRT 102

Advisory Prerequisite: SBC 203

DEC: G

SBC: HFA+

3 credits

SBC 354: Drawing for Design--CAD

Techniques and Theory of Drawing; Architectural Drawing; Learning Computer Assisted Design (CAD). This course will serve as an introduction to CAD tools relevant to design and architectural rendering.

Prerequisite: SBC 117

SBC: STEM+

3 credits

SBC 374: Environment and Development in African History

Provides a critical exploration of the history and political-economy of environmental changes and human activities in Africa from earlier times to the present. It examines the ways in which the dynamics of human-environment relationship have shaped the development of African societies and economies from the rise of ancient civilizations to the contemporary problems of war and famine. Although significant attention will be given to the pre-colonial era (like the impacts of iron-working, irrigation, deforestation and desertification), the focus of the course will be on the 20th and century and after, looking at the impacts of imperialism, colonialism, globalization and the postcolonial quest for development on the state of the environment in Africa. In the discussion, we will demonstrate that the shaping of African environments and ecologies is a product of complex, evolving and interconnected developments between humans and nature within and beyond the African continent. Offered as both AFS 374 and SBC 374. Not for credit in addition to SBC 320.

Prerequisite: U3 or U4 status

DEC: J

SBC: GLO, SBS+

3 credits

SBC 401: Integrative, Collaborative Systems Studies

Problem-based capstone course.

Prerequisite: U3 or U4 status

SBC: ESI

3 credits

SBC 475: Undergraduate Teaching Practicum

Work with a faculty member as assistant in a regularly scheduled course. The student must attend all classes and carry out all assignments; in addition the student will be assigned a specific role to assist in teaching the course. The student will meet with the instructor on a regular basis to discuss intellectual and pedagogical matters relating to the course.

Prerequisites: Permission of instructor and undergraduate director

SBC: ESI, EXP+

3 credits, S/U grading

SBC 476: Undergraduate Teaching Practicum II

Work with a faculty member as an assistant in one of the faculty member's regularly scheduled courses. Students assume greater responsibility in such areas as leading discussions and analyzing results of tests that have already been graded. Students may not serve as teaching assistants in the same course twice.

Prerequisites: Permission of instructor and undergraduate director

SBC: EXP+

3 credits, S/U grading

GSS

Geospatial Science

GSS 105: Introduction to Maps and Mapping

An introduction to the study and design of map formats, symbology, coordinate systems, and how maps record the historical patterns of human behavior. The course will also examine maps as a tool to analyze human activity and societal development, and include important aspects of map data collection, processing, the Global Positioning System (GPS), quantitative mapping, and GIS-based mapmaking techniques.

DEC: F

SBC: SBS

3 credits

GSS 309: GIS and Cartography

Cartography is the knowledge associated with the art, science, and technology of maps. Digital computer cartography still follows the same fundamental principles and still requires a broad understanding of graphicacy as a language (as well as numeracy and literacy). This course will provide an introduction to cartographic principles, concepts, software and hardware necessary to produce good maps, especially in the context (and limitations) of geographic information systems (GIS).

Prerequisite: GEO 102 or GSS 105 or MAR 104 or SBC 113 or instructor consent

3 credits

GSS 313: GIS Design and Application I

Provides the basic concepts underlying modern geographic information science and technology. Emphasis is placed on the principles of GIS for characterizing environmental systems and computer-based techniques for processing and analyzing spatial data. The course is three credit hours of lecture. This lecture course must be taken in the same semester as the associated laboratory, GSS 314. Not for credit in addition to GSS 317.

Prerequisite: MAT 125 or MAT 131 or AMS 151 or instructor consent

Corequisite: GSS 314

SBC: TECH

3 credits

GSS 314: GIS Laboratory

Practice using the GIS techniques and tools learned in the lecture (GSS 313), work on exercises, and process and analyze the spatial data for the course project. This laboratory course must be taken in the same semester as GSS 313.

Corequisite: GSS 313

1 credit

GSS 317: Geospatial Narratives: Deep Mapping for Humanities and Social Sciences

Building on formal methods in qualitative reasoning, spatial and temporal representation and geospatial science, this course will explore state-of-the-art methods for humanities and social sciences students to visualize and drill down data. Hands-on exercises of deep mapping will cover how to collect, analyze and visualize quantitative and qualitative data, spatial data, images, video, audio, and other representations of places and artifacts in humanities and social sciences. This course will also discuss models of reasoning about events, actions and changes that are spatially contextualized. Not for credit in addition to GSS 313.

Prerequisite: WRT 102

Advisory Prerequisite: some working knowledge of spreadsheets

SBC: *TECH*

3 credits

GSS 323: GIS Database and Design

Concepts of geodatabase design and management in geographic information systems (GIS), SQL statements, geographic data types and functions, data entry, techniques of geographic information structure applications. This is a Windows based computer class with the majority of students work involving GIS computer software.

Prerequisite: GSS 313 or GSS 317 or equivalent

3 credits

GSS 325: GIS Design & Applications II

The course builds upon the topics covered in GIS Design and Application I. It emphasizes the applications of GIS in solving real-world problems. Students are expected to gain an understanding of GIS theory, methodology and most importantly application. Students are also expected to demonstrate abilities of spatial thinking, spatial analysis, and be able to solve practical spatial problems utilizing a GIS. Because GIS is both a tool for analysis and the visual communication of these data, students will be required to develop a GIS presentation, much as would be expected in a professional setting. This independent project will constitute a substantial portion of the final grade. This is a Windows based computer class with the majority of students work involving GIS computer software.

Prerequisite: GSS 313 or GSS 317 or equivalent

3 credits

GSS 326: GIS Project Management

The course addresses issues unique to a GIS operation such as implementation issues, decision making procedures, strategies for success, legal issues, involvement of management, marking within an organization, strategic planning, and industry outlook.

Prerequisite: GSS 313 or GSS 317 or equivalent

3 credits

GSS 350: Applied Spatial Data Analysis

An introduction to geospatial statistical analysis that aims to provide students with the background necessary to investigate geographically represented data. The specific focus is on spatial data analysis, such as the analysis of autocorrelation, principles

of geostatistics and analysis methods that are relevant in the fields of public health, environmental/earth science and social science. An important aspect of the course is to gain hands-on experience in applying these techniques with GIS and spatial analytical software, and essential methodological and practical issues that are involved in sophisticated spatial analyses.

Prerequisite: AMS 102 or equivalent and GSS 313 or GSS 317 or equivalent

SBC: *STEM+*

3 credits

GSS 354: Geospatial Science for the Coastal Zone

The use of spatial data is becoming increasingly critical in the decision management process and planning of the coastal zone. This course will use GIS and Remote sensing tools to collect and analyze data for integrating into the management, planning, and monitoring of the coastal geomorphology and ecosystems.

Prerequisite: GSS 313 or GSS 317 or equivalent

3 credits

GSS 355: Remote Sensing GIS Data

Provides a basic overview of the technology by which aircraft and satellite images of the Earth are produced as well as hands on experience manipulating and interpreting. Students gain practical experience in environmental analysis using satellite imagery and commonly used sensors and analytical methods for the Earth sciences.

Prerequisite: GSS 105 or MAR 104 or GEO 102

SBC: *STEM+*

3 credits

GSS 390: Topics in Geospatial Science

Course will present special interest topics or recent software enhancements in the rapidly developing field of Geospatial Science. The course will include a mixture of core geospatial techniques and recently released methodology. Course content will include a diversity of Geospatial topics and include discipline specific topics relevant to majors in physical sciences, social sciences, business and engineering. Repeatable as the topic changes to a maximum of 6 credits.

Prerequisite: U3 or U4 status or permission of the instructor

3 credits

GSS 475: Undergraduate Teaching Practicum

Work with a faculty member as assistant in a regularly scheduled course. The student must attend all classes and carry out all assignments; in addition the student will be assigned a specific role to assist in teaching the course. The student will meet with the instructor on a regular basis to discuss intellectual and pedagogical matters relating to the course.

Prerequisites: Permission of instructor and undergraduate director

SBC: *EXP+*

3 credits, S/U grading

GSS 487: Geospatial Science Research

Qualified advanced undergraduates may carry out individual research projects under the direct supervision of a faculty member. Repeatable to a maximum of 3 credits.

Prerequisite: Permission of instructor

0-3 credits, S/U grading

GSS 488: Geospatial Science Internship

The GSS Internship is designed to provide students experience in the real workplace. Interns are expected to function as a GIS/Remote Sensing professional and work within the existing host facility structure or on a free standing project. Interns will complete assigned tasks by hosting facility such as GIS data entry, data retrieval, remote sensing analysis, GPS field work, documentation, or general GIS facility duties. These activities will be monitored by both a representative of the host facility and the instructor. May be repeated to a limit of 12 credits.

Prerequisites: GSS 325; GSS 313 or GSS 317, or instructor consent

SBC: *EXP+*

0-12 credits, S/U grading